Name: ______________________________

GCSE (1 – 9)

Circle Theorems

Instructions

• Use **black** ink or ball-point pen.
• Answer all questions.
• Answer the questions in the spaces provided
– there may be more space than you need.
• Diagrams are **NOT** accurately drawn, unless otherwise indicated.
• You must **show all your working out.**

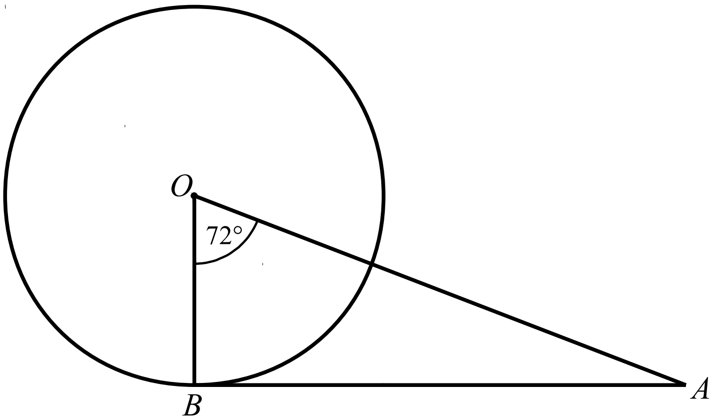
Information

• The marks for each question are shown in brackets
– use this as a guide as to how much time to spend on each question.

Advice

• Read each question carefully before you start to answer it.
• Keep an eye on the time.
• Try to answer every question.
• Check your answers if you have time at the end

1



B is a point on the circumference of a circle, centre *O*.
AB is a tangent to the circle.

Angle *BOA* = 72°

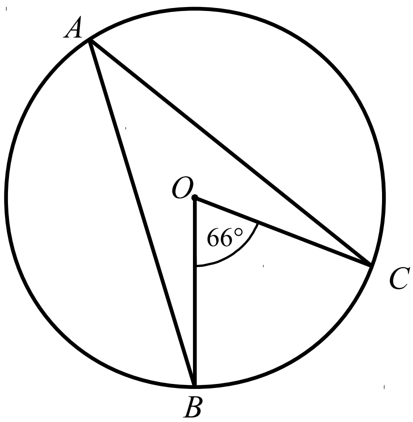
Work out the size of angle *BAO*.
You must show all your working.

°

....

(Total for Question 1 is 2 marks)

2



A, B, C and *D* are points on the circumference of a circle.

Angle *BOC* = 66°

(i) Find the size of angle *BAC*.

°

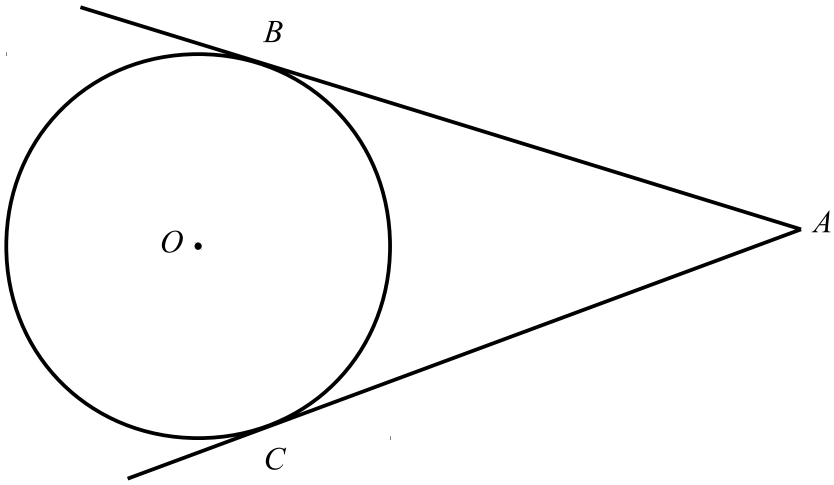
(ii) Give a reason for your answer. ....

....

....

(Total for Question 2 is 2 marks)

3



B and *C* are points on a circle, centre *O*.
AB and *AC* are tangents to the circle.

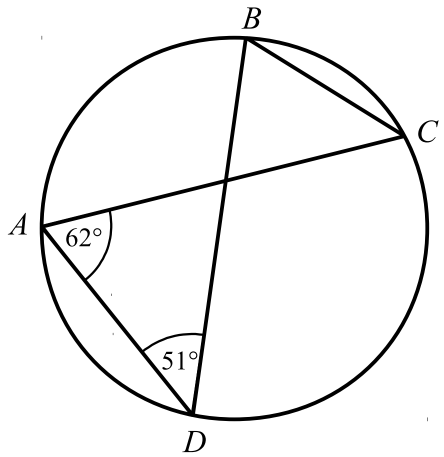
Angle *BAC* = 40°

Work out the size of angle *BOC*.
You must show all your working.

°
....

(Total for Question 3 is 3 marks)

4



A, B, C and *D* are points on the circumference of a circle.

Angle *CAD* = 62°
Angle *ADB* = 51°

(i) Find the size of angle *ACB*.

°
....

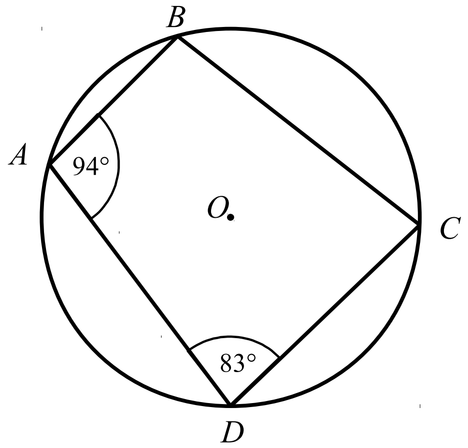
(ii) Give a reason for your answer.

....

....

(Total for Question 4 is 2 marks)

5



A, B, C and *D* are points on the circumference of a circle.

Angle *BAD* = 94°
Angle *ADC* = 83°

(i) Find the size of angle *ABC*.

.... °

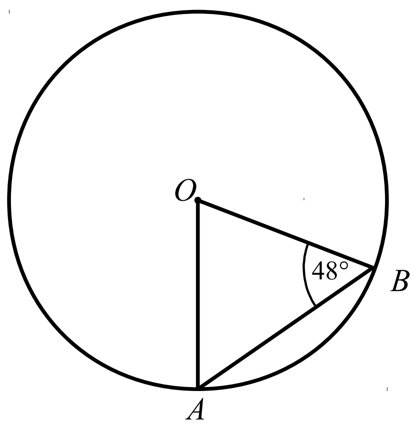
(ii) Give a reason for your answer.

....

....

(Total for Question 5 is 2 marks)

6



A and *B* are points on the circumference of a circle, centre *O*.

Angle *ABO* = 48°

(i) Find the size of angle *AOB*.

.... °

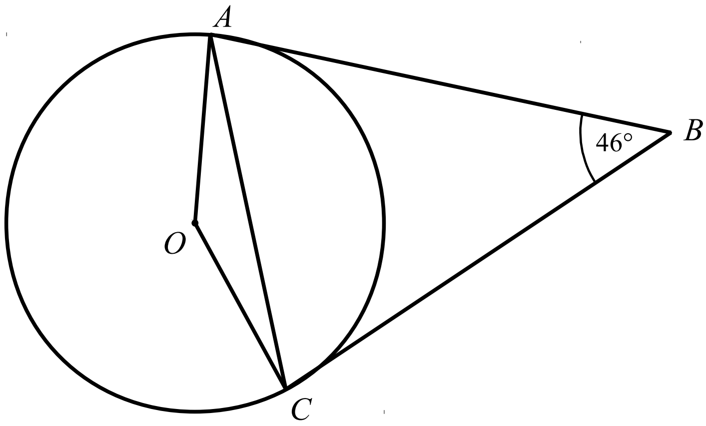
(ii) Give a reason for your answer.

....

....

(Total for Question 6 is 2 marks)

7



A and *C* are points on the circumference of a circle, centre *O*.
AB and *BC* are tangents to the circle.

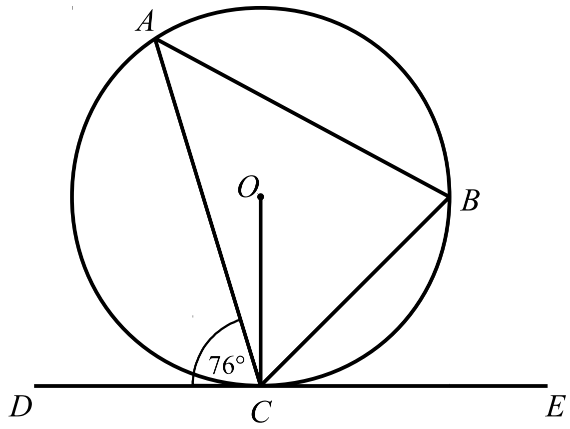
Angle *ABC* = 46°

Find the size of angle *OAC*.
Give reasons for each stage of your working.

....°

(Total for Question 7 is 4 marks)

8



A and *B* are points on the circumference of a circle, centre *O*.
DCE is a tangent to the circle.

Angle *ACD* = 76°

(a) Find the size of angle *ACO*.
Give reasons for each stage of your working.

.... °

(2)

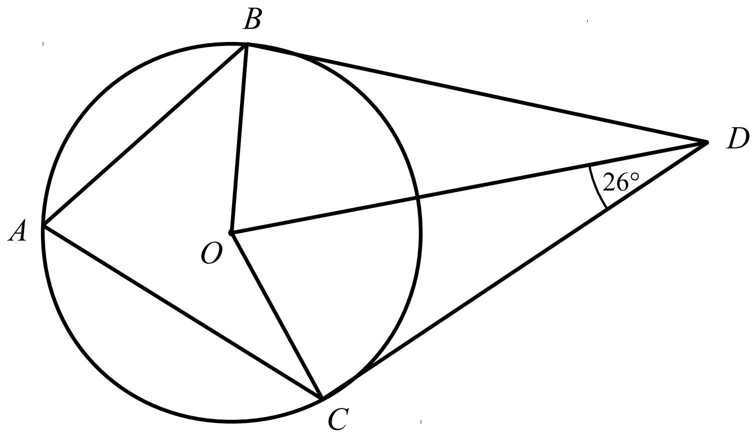
(b) Find the size of angle *ABC*.
Give reasons for each stage of your working.

.... °

(2)

(Total for Question 8 is 4 marks)

9



A, B and *C* are points on the circumference of a circle, centre *O*.
BD and *CD* are tangents to the circle.

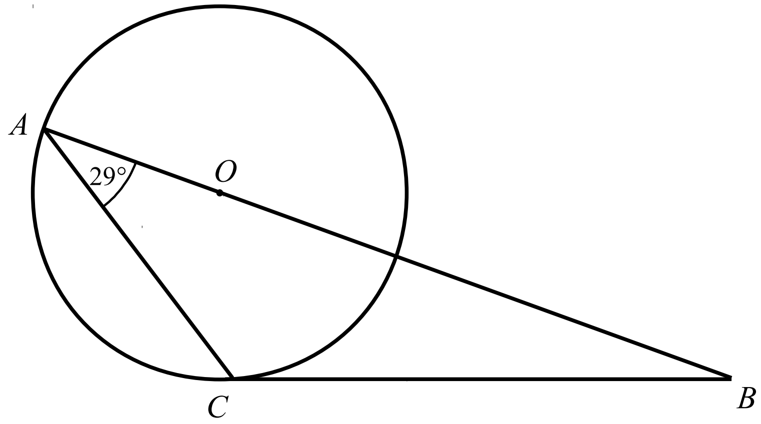
Angle *ODC* = 26°

Find the size of angle *BAC*.
Give reasons for each stage of your working.

.... °

(Total for Question 9 is 4 marks)

10



A and *C* are points on the circumference of a circle, centre *O*.
BC is a tangent to the circle.

Angle *CAB* = 29°

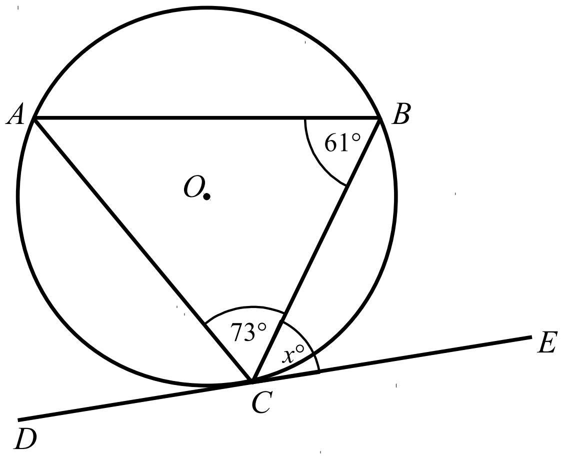
Find the size of angle *ABC*.
You must show all your working.

°

....

(Total for Question 10 is 4 marks)

11



A, B and *C* are points on the circumference of a circle, centre *O*.
DCE is a tangent to the circle.

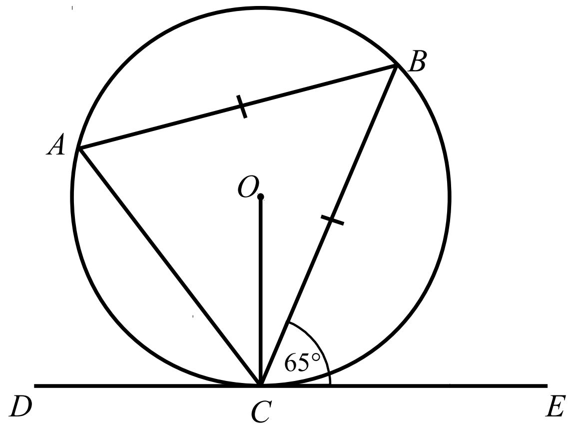
Angle *ABC* = 61°
Angle *ACB* = 73°
Angle *BCE* = *x*°

Find the value of *x*.
Give reasons for each stage of your working.

°
....

(Total for Question 11 is 3 marks)

12



A, B and *C* are points on the circumference of a circle, centre *O*.
DCE is a tangent to the circle.

AB = *BC*
Angle *BCE* = 65°

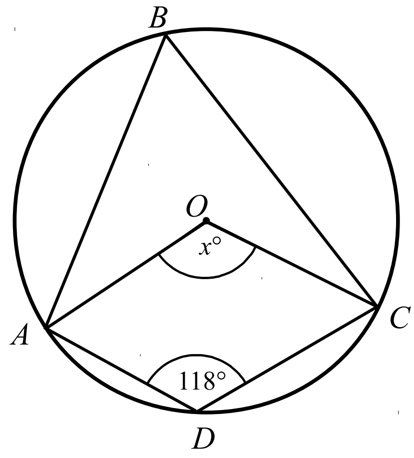
Find the size of angle *AOC*.
You must show all your working.

°

....

(Total for Question 12 is 4 marks)

13



A, B, C and *D* are points on the circumference of a circle, centre *O*.

Angle *ADC* = 118°
Angle *AOC* = *x*°

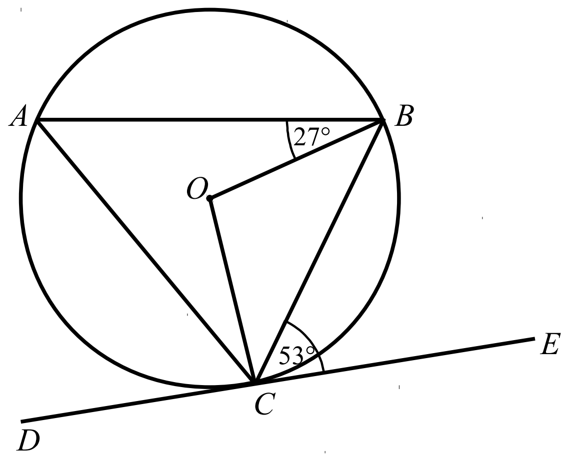
Work out the value of *x*.
You must show all your working.

°

....

(Total for Question 13 is 3 marks)

14



A, B and *C* are points on the circumference of a circle, centre *O*.
DCE is a tangent to the circle.

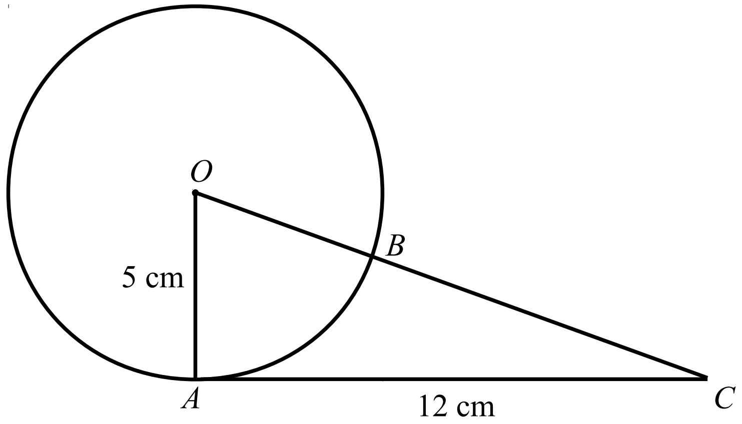
Angle *ABO* = 27°
Angle *BCE* = 53°

Find the size of angle *ACO*.
Give reasons for each stage of your working.

.... °

(Total for Question 14 is 4 marks)

15



A and *B* is a point on the circumference of a circle, centre *O*.
AC is a tangent to the circle.
OBC is a straight line.

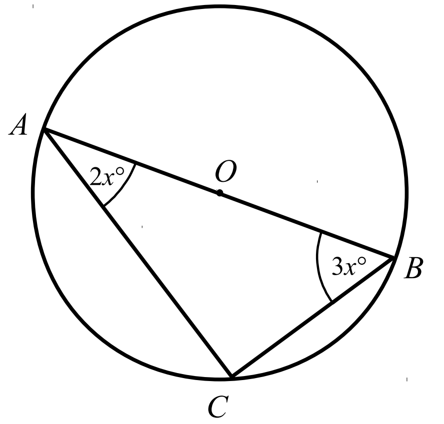
OA = 5 cm
AC = 12 cm

Find the length of *BC*.
You must show all your working.

.... cm

(Total for Question 15 is 4 marks)

16



A, B and *C* are points on the circumference of a circle, centre *O*.

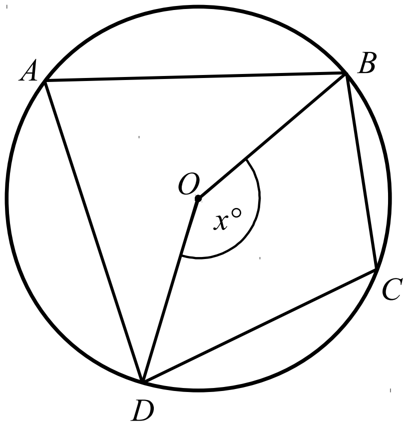
Angle *CAB* = $2x°$
Angle *ABC* = $3x°$

Find the value of *x*.
You must show all your working.

x = ...

(Total for Question 16 is 3 marks)

17



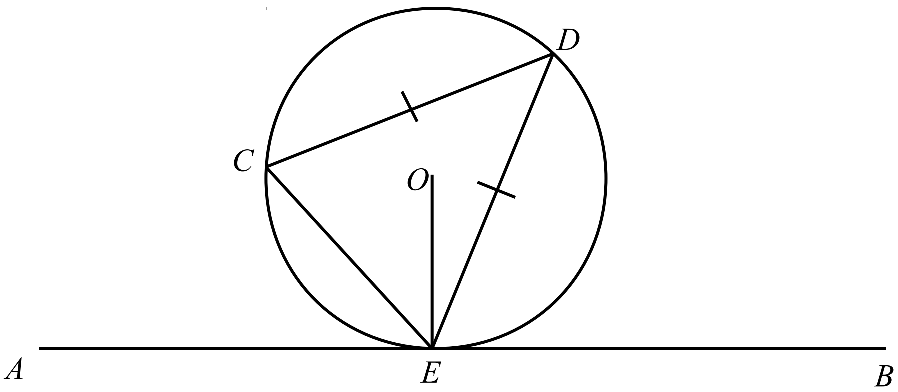
A, B, C and *D* are points on the circumference of a circle, centre *O*.

Angle *BOD* = $x°$

Find the size of angle *BCD*, in terms of *x*.
Give reasons for each stage of your working.

(Total for Question 17 is 3 marks)

18



C, *D* and *E* are points on a circle, centre *O*.
AEB is a tangent to the circle at *E*.

CD = *DE*
Angle *AEC* = x°

Find the size of angle *OED*, in terms of x.
Give reasons for each stage of your working.

(Total for Question 18 is 5 marks)